

Future Force Warrior Software Functionality

Terence Rice
Future Force Warrior
Software Integration Team
Natick Soldier Center



**The Science Behind the
Warrior:
Yesterday, Today and**



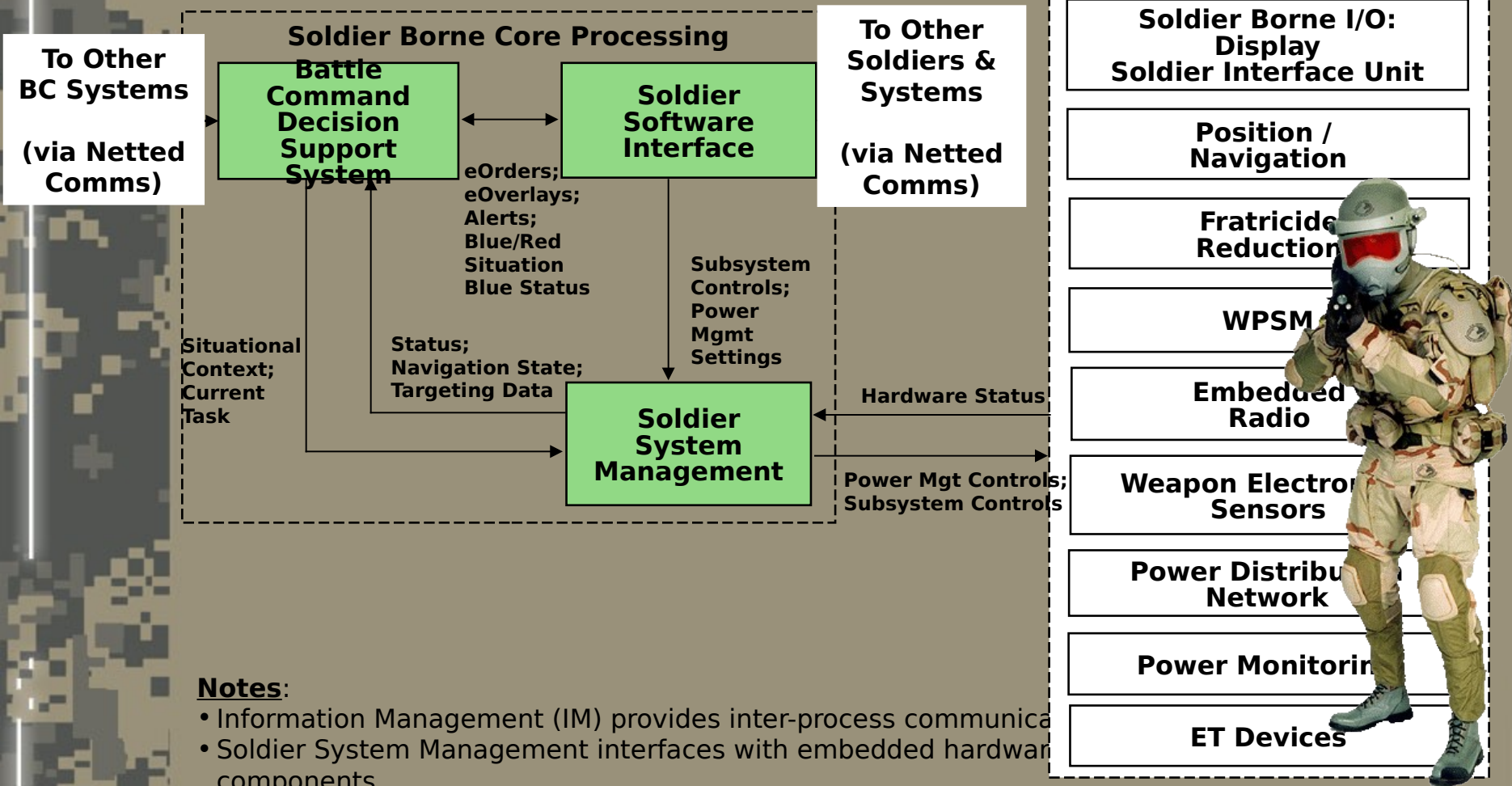
FFW Software

- **Software Architecture**
- **Software Functionality**
- **Leveraged Programs**
- **Interoperability with FCS**



Software Architecture (System View)

System View: Soldier Borne System



Notes:

- Information Management (IM) provides inter-process communication
- Soldier System Management interfaces with embedded hardware components
- Embedded Training & Information Assurance are integral with all green boxes



Software Architecture (Technical View)

Technical View: Technical Reference Model Interfaces

Embedded Training Components

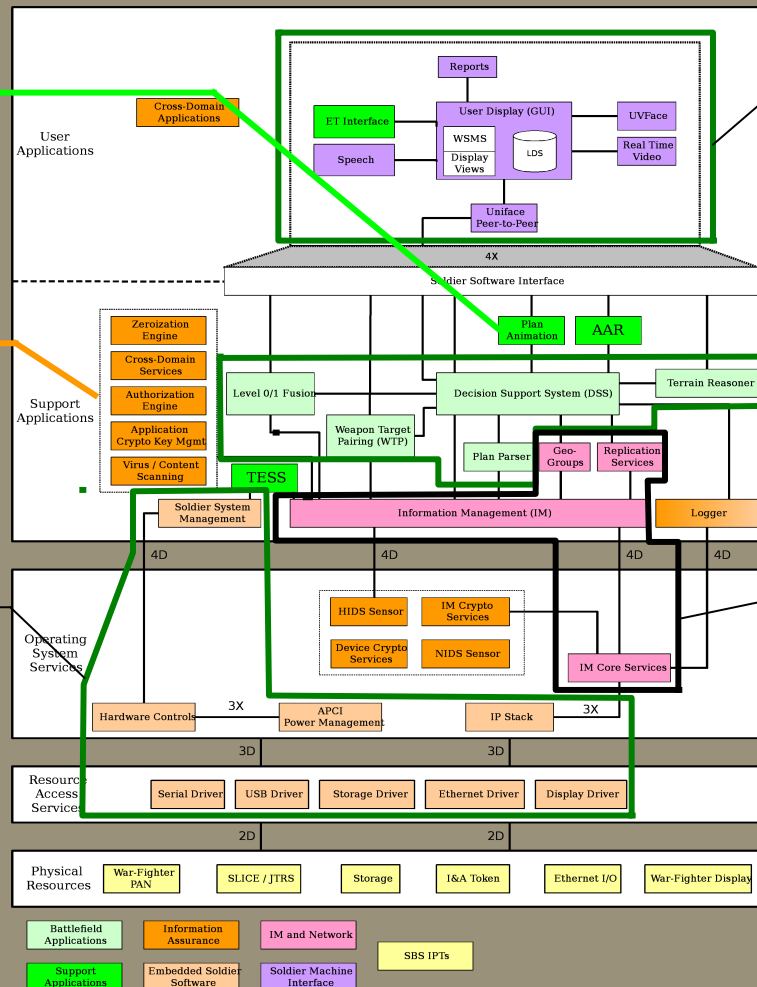
Information Assurance Components

Soldier System Management Components

Soldier Software Interface Components

Battle Command Decision Support System Components

Information Management Components





Soldier Software Interface (SSI)

▪ **Graphical User Interface Development (GUI)**

- Command & Control – situational awareness
- Embedded Training, Planning, Rehearsal
- Battle applications, Information assurance
- Soldier health & sustenance
- Integrated logistics support, Ensemble status
- Mapping, charting, geodesy, and imagery (MCG&I) support

▪ **Multi-Modal Input / Output Processing**

- Includes the mix of human interface inputs and outputs

▪ **Unmanned Vehicle Command and Control Services**

- Services to provide planning, control, and interfaces from the Soldier to unmanned air and ground robotic vehicles or manned vehicles in autonomous control mode



Support Applications (SA)

▪ **Mission Preparation**

- Services providing tactical situation simulation tools to predict and project possible combat mission outcomes based upon different plan scenarios

▪ **Sustainment**

- Collection and aggregation of health, consumable, and equipment status

▪ **Embedded Training**

- Services for training in both live and virtual environments and to access online help

▪ **After Action Review**

- AARs for training exercises and operational missions



Battlefield Applications (BA)

▪ **Decision Support System**

- Collaborative Situational Awareness and Networked Planning
- Maneuver, networked communications, networked sensors, cooperative engagement, and networked effects planning
- Warfighter alerting for the Small Team Systems-of-Systems

▪ **Netted Effects**

- Components to perform weapon target pairing, effects messaging, deconfliction, monitoring, and asset management

▪ **Terrain Reasoner**

- Services to provide coverage, mobility, and geometric services

▪ **Level 0/1 Fusion**

- Provide squad-level fusion services for the enemy (Red) situation



Embedded Soldier Software (ESS)

▪ **Operating System Optimization**

- Operating system that will run on the main computer of the Soldier ensemble and the Leader's tablet
 - Optimized for performance and power savings

▪ **Soldier Subsystem Control Interfaces**

- Interfaces that are used by the software components running on the main computer of the Soldier ensemble to communicate with the Soldier Borne System hardware

▪ **Soldier Subsystem Power Management**

- Device and power management services that will run on the main computer of the Soldier ensemble and the Leader's tablet



Information Assurance (IA)

▪ Identification and Authentication

- Subject's identity is established and then verified against a trusted source

▪ Cryptographic

- Services to provide access to non-COMSEC cryptographic processing capabilities

▪ Authorization Services

- Ensuring the proper access to system resources

▪ Auditing and Protection Services

- Protection against system compromise by intentional hacking and software bugs
- Collection and analysis of information related to processing at the various layers in the system

▪ Cross-Domain Services

- Maintaining the integrity of data and processes in an environment where data must be utilized across security domains



Information Management & Networking (IMN)

▪ Core Messaging Services

- Reliable Messaging
- Best Effort Messaging
- Group Messaging / Group Management

▪ Dissemination Services

- Ability to send messages to one or more nodes based on a set of factors

▪ Interoperability Translation Services

- Provides a JVMF parser to translate FFW message traffic to / from JVMF formats for communication with FCS

▪ Replication Services

- Replicating data elements among groups



FFW Software - Leveraged Programs

Leveraged Programing	Technology Area
FC NET	BA: WTP component
TARDEC Vetronic Technology Integration (VTI)	BA: Terrain reasoner
DARPA FCS C2	BA: Decision Support System (DSS)
DARPA FCS C2 TARDEC VTI	BA: C2 Data Model
OneTESS(Tactical Engagement Simulation System)	SA: Live Training, Test & Evaluation
OTB: OneSAF testbed Baseline OOS:OneSAF Objective System	SA:OneSAF
ARL-Robotics Collaborative Technology Alliance (RCTA)TARDEC	SSI: Mapping, Charting Geodessy, & Imagery
Unmanned Vehicle User Interface ARL-Robotics CTA	SSI: Robotic asset control
ARL Robotics CTA	SSI: Spoken Language Interface/Dynaspeak
ARL Robotics CTA	SSI: Unmanned Vehicle User Interface



Interfacing to FCS

- **FFW will support a variety of formats (xml, jvmf) to provide interoperability capabilities with FCS**
- **ADOCS is a message translator that will be leveraged as a gateway to FCS**
- **FFW will typically send reports to FCS such as 'spot', 'target', and 'SITREP'**